IL-6 promotes ICAM-1 expression and cell motility in human osteosarcoma

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Abstrate

Osteosarcoma is characterized by a high malignant and metastatic potential. Interleukin-6 (IL-6) is a multifunctional cytokine that is associated with the disease status and outcomes of cancers. However, the effect of IL-6 on migration activity in human osteosarcoma cells is mostly unknown. Here we found that IL-6 increased the migration and expression of intercellular adhesion molecule-1 (ICAM-1) in human osteosarcoma cells. Transfection of cells with ICAM-1 siRNA reduced IL-6-mediated cell migration. We also found that expression of IL-6 was significantly greater in human osteosarcoma tissues than in normal bone. The integrin-linked kinase (ILK)/Akt/AP-1 pathway was activated after IL-6 treatment, and IL-6- induced expression of ICAM-1 and migration activity was inhibited by the specific inhibitor and siRNA of ILK, Akt, and AP-1 cascades. In addition, over-expression of IL-6 shRNA inhibited the migratory ability and ICAM-1 expression in osteosarcoma cells. Taken together, these results indicate that IL-6 and IL-6 receptor interaction occurs through ILK and Akt, which in turn activates AP-1, resulting in the activations of ICAM-1 and contributing the migration of human osteosarcoma cells.